Draft

1984

Michigan

Region II

Northern Lower Michigan

Jack Pine Budworm (Choristonuera pinus)

Jack pine budworm populations for the most part have collapsed in northern lower michigan. This major defoliator of our jack pine type caused little detectable defoliation on state and private land in the northern lower peninsula. Staminate flower production was very low in areas were budworm has been active during the last few years. Staminate flower production seems to be correlated with budworm survival. Whether the relationship is cause and effect we do not yet know. Let it suffice to say that budworm seems to do much better when staminate flower production is high.

A pocket of active jack pine budworm continues to persist in the Huron Manistee National forest. The following map shows a zone where potential budworm activity exists. We would expect less than 4,000 acres of detectable defoliation next year.

Monitored plantations (younger, more intensively managed) across the region showed varying levels of budworm activity. The following table shows the late larval survey values for monitored plantations. The values indicate mean number of larvae per 15 inch branch samples based on 30 - 40 randomly selected samples per plantation. The survey indicate several isolated "Hot Spots" scattered throughout the region despite insignificant defoliation.

Although the outbreak has subsided, damaged stands not salvaged continue to deteriorate. This is particularly true in stands that are inoperable nor saleable. On state land 95-99% of our operable stands that were significantly damaged have been salvaged.

District 5

County	Location	Average Larvae/15" Branch Sample
CHE	35N, 2W, S34 N1/2NW, SWNW, NWSW	0.40000
CHE	35N, 2W, S34 N1/2SWSW, S1/2SESW	0.13000
MTM	29N, 2E, S31 E1/2NW	3.20000
MTM	31N, 4E, S19 N1/2NWNW	3.10000
MTM	29N, 2E, S30 N1/2N1/2SW	1.20000
MTM	31N, 4W, S17/18 1/2SWSW;SESE	3.20000
OTS	29N, 1W, S10 S1/2NW	0.90000
OTS	29N, 1W, S10 S1/2S1/2NE, N1/2SE	0.96000
OTS	29N, 1W, S16 N1/2NE	2.14000
OTS	29N, 1W, S16 SENW	0.76000
OTS	29N, 1W, S16 SWSW, S1/2NWSW	4.40000
PRE	35N, 3E, S16 N1/2NE	0.26000
PRE	35N, 3E, S16 N1/2NE	0.26000

District 7

County	Location	Average Larvae/15" Branch Sample
CRA	25N, 3W, S10 S1/2NE, S1/2NWNE	0.11600
CRA	25N, 3W, S11 NENE, N1/2SENE	0.00000
OSC	27N, 2E, S5 W1/2W1/2NE	0.26000
OSC	28N, 2E, S33 E1/2NENE	0.00000
OSC	27N, 2E, S17 NE	0.20000
OSC	27N, 2E, S5 SESW	0.15000
ROS	24N, 2W, S22 W1/2NWSE	0.25000
ROS	24N, 2W, S22 SWSW	0.23000
ROS	24N, 2W, S22 E1/2NENE, SENE	0.15000

HIGH HAZARD PLANTATIONS SURVEYED

FOR LATE JACK PINE BUDWORM LARVAE 1986

A

Zone of potential Jack Pine Budworm Defoliation

White Pine Weevil (Pissodes strobi)

White pine weevil continues to be our most insidious jack pine pest. Across the region jack pine stands are hit repeatedly by this terminal feeder. The median weeviling level for monitored plantations across the region remains consistent with last years level of 36% . In 1985 we made some volume loss predictions based on a model developed at MSU. Assumptions made are now not believed to be conservative enough giving us an overestimate of volume loss. We have now adjusted our assumptions to give us a more true representation of what may be happening in our jack pine stands. If we use the regionwide median weeviling rate of 36 % and project that weeviling rate through time our regionwide volume losses turn out to be in the vicinity of 30% , still quite high especially when one considers the the fairly tenuous economics of growing jack pine. The table below shows this years results of stands that we surveyed for current % weeviling. This years survey was conducted on the ground in mid to late August with no apparent loss of accuracy. No operational control measures were undertaken this year since no practical control method yet exists.

Because of just how little we know about White pine weevil biology, ecology, impact, economics and management we are embarking on a new research drive in cooperation with MSU and the U.S. Forest Service. This project will be discussed in more detail in the special projects section of this report.

District 5

County	Location	Current Years % Weeviling
CHE	35N,2W,S27 SWNW	10.0000
CHE	35N,2W,S34 N1/2NW, SWNW, NWSW	12.7500
MTM	29N,2E,S2 SWNW, N1/2SW	15.2500
MTM	29N,1E,S15 SWNW, S1/2NWNW	23.7500
MTM	29N,2E,S31 E1/2NW	40.0000
MTM	31N,2E,S7 W1/2NWSE, E1/2NESW	6.50000
MTM	31N,4E,S7/18 S1/2S1/2SW; NW,SWNE, NWSW	14.7500
MTM	31N,4E,S19 N1/2NWNW	17.5000
MTM	31N,43,S20 E1/2NW	19.5000
MTM	29N,23,S30 N1/2N1/2SW	39.0000
OTS	29N,1W,S10 S1/2NW	28.5000
OTS	29N,1W,S10 S1/2S1/2NE, N1/2SE	40.5000
OTS	29N,1W,S16 N1/2NE	27.7500
PRE	33N,2E,S18/19 SWSESW; N1/2N1/2NENW	14.7500
PRE	35N,3E,S16 N1/2NE	55.0000

District 6

County	Location	Current Years % Weeviling
KAL	27N,8W,S15 N1/2NENWSE, SESWNE	25.0000
KAL	27N,8W,S32 N1/2NE, SWNE	31.0000
LAK	19N,13W,S14 E1/2SESE	31.0000
LAK	18N,12W,S7 W1/2NENW	34.0000
LAK	19N,12W,S16 N1/2 SWSE,N1/2SESW	38.0000
LAK	19N,12W,S18 W1/2W1/2SW	16.0000
LAK	19N,12W,S19 S1/2SENE, N1/2NENE	25.0000
LAK	20N,12W,S19 SESW	55.0000
LAK	18N,12W,S7 SWSW	68.0000
LAK	19N,12W,S30 N1/2NE	13.0000
LAK	20N,12W,S30 NESE	41.0000
LAK	18N,11W,S18 NWSE	20.0000
LAK	19N,12W,S32 W1/2SE	12.0000

District 7

County	Location	Current Years % Weeviling
CRA	25N,3W,S10 S1/2NE, S1/2NWNE	31.0000
CRA	25N,4W,S32 E1/2SE, NWSE	37.0000
CRA	25N,4W,S21 SWSE, W1/2SESW, W1/2SWSW	62.5000
CRA	25N,4W,S28 SENW	56.2000
CRA	25N,4W,S33 SWSE, SESW	32.5000
CRA	26N,42,S3 S1/2	7.20000
CRA	26N,3W,S27 E1/2SENE	11.8000
CRA	26N,3W,S27 E1/2N1/2NW	4.72000
CRA	25N,4W,S23 SWNW	52.6000
OSC	27N,2E,S5 W1/2NW,W1/2SENW	21.5000

% WEEVILING 1986 PLANTATION SURVEY

% WEEVILING 1986 PLANTATION SURVEY
CONTINUED . .

County	Location	Current Years % Weeviling
OSC	27N,2E,S5 W1/2W1/2NE	11.8300
ROS	23N,1W,S25 SWSW	41.9000
ROS	23N,1W,S36 W1/2NW, NESE,NWNE	40.0000
ROS	24N,4W,S4 SWNE, NENE, S1/2NW, N1/2SW	20.2000
ROS	24N,4W,S6 S1/2SWSE	40.0000
ROS	24N,2W,S22 W1/2NWSE	35.8000
ROS	24N,2W,S22 SWSW	26.6000
ROS	24N,2W,S22 E1/2NENE,SENE	40.1000
ROS	24N,2W,S23 S1/2NWNW, W1/2SENW	35.6000
ROS	24N,4W,S5 N1/2NWSE	29.5000
ROS	24N,4W,S5 E1/2NW	39.7000
ROS	24N,4W,S5 E1/2NE	46.0000
ROS	24N,4W,S5 NESE, S1/2NWSE	34.5000
ROS	23N,1W,S36 NESE	46.0500
ROS	23N,1W,S25 NWSE	57.8000
ROS	23N,1W,S36 S1/2NW	49.2000

Gypsy Moth (Lymantria disoar)

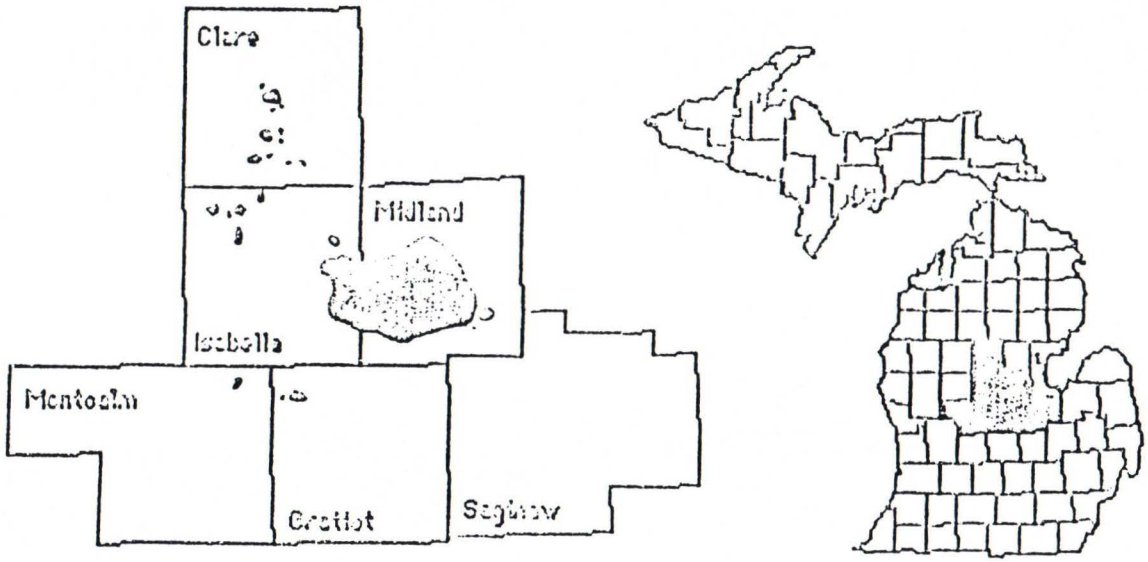
Gypsy moth populations are continuing to increase regionwide. Detectable defoliation in 1986 was confined to a six county area in central lower Michigan. 64,150 total acres were defoliated this year in Clare, Isabella, Midland, Gratiot, Montcalm and Saginaw counties. Defoliation mostly occurred on private land with the private acreage accounting for over 80 % of the defoliation with the balance on state land.No federal land has yet been involved. Acreages can be found in the following table. The defoliation map was developed by a new technique being investigated by the Center for Remote Sensing at MSU and the DNR in cooperation with the MDA. The technique involves airborne infra-red video. Details on this project can be found in the special projects section of this report.

Gypsy moth suppression efforts continue as an Michigan Department of Agriculture sponsored program administered by local government. Details on the MDA suppression effort can be found in the special problems section of this report. The Michigan department of Natural Resources in cooperation with the county of midland, funded the spraying of state owned land that bordered MDA sponsored spray blocks . This project was intended to give visual relief to homeowners in situations where private sprayed land was adjacent to heavily infested state land. This year approximately 140 acres of state owned land was involved. Treatment cost was $12.80 /acre. One application of BT (Bacillus thurengiensis) was used in this project. We will continue this effort with county governments in 1987 up to the 1986 funding level.

COUNTY	STATE			PRIVATE		
	SL*	M	H	SL	M	H
CLARE	0	0	0	0	1319	650
GRATIOT	0	0	0	0	400	0
ISABELLA	200	510	120	800	4300	60
MIDLAND	210	6210	5010	1570	31310	11180
MONTCALM	0	0	0	0	200	0
SAGINAW	0	0	0	0	30	0
	410	6720	5130	2370	37630	11890
TOTAL		12,260			49,520	
GRAND TOTAL						64.150
TOTAL		19.11%			80.88%	

ACRES DEFOLIATED BY GYPSY MOTH
BY COUNTY/OWNERSHIP 1986

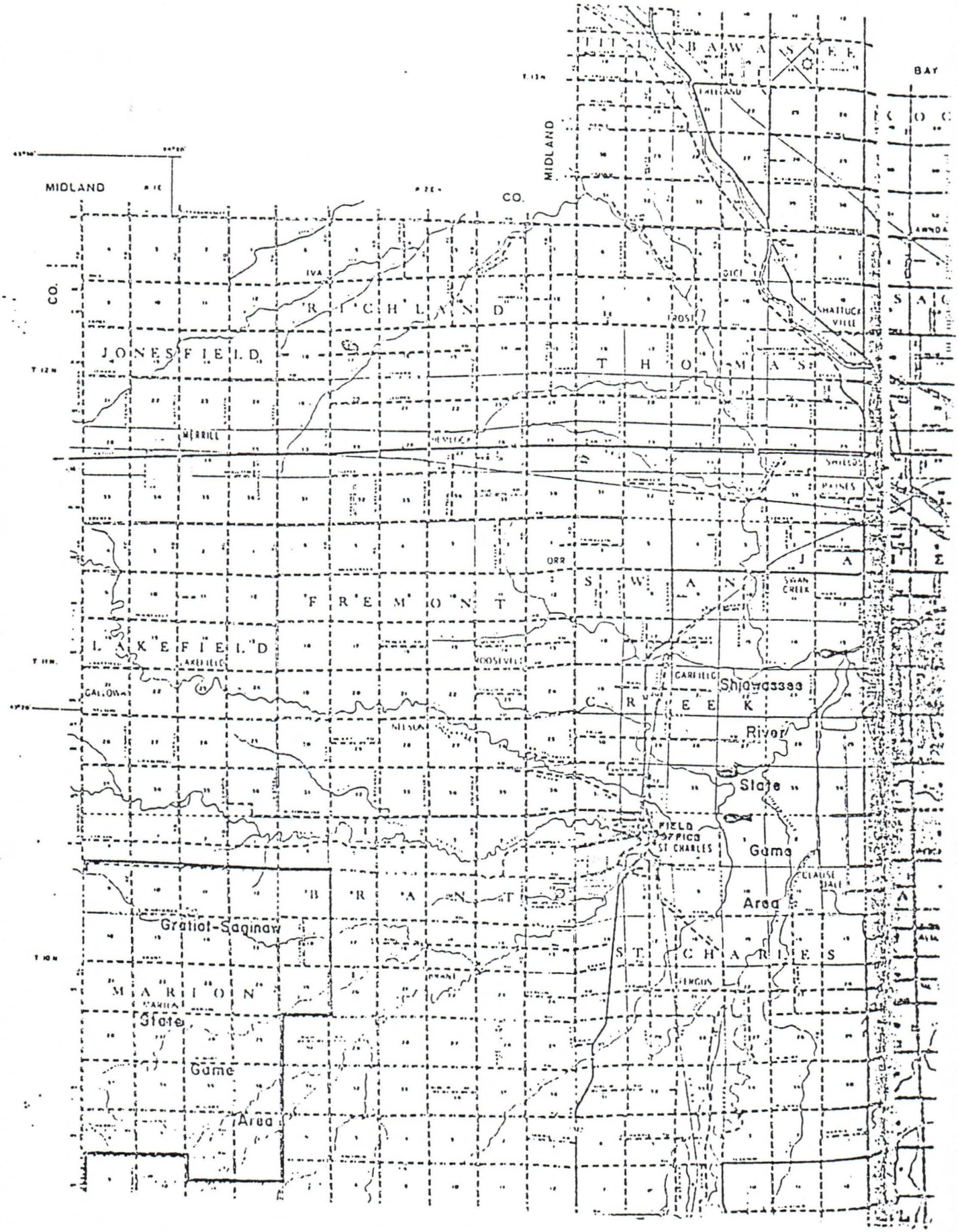
SL* - Scattered Light



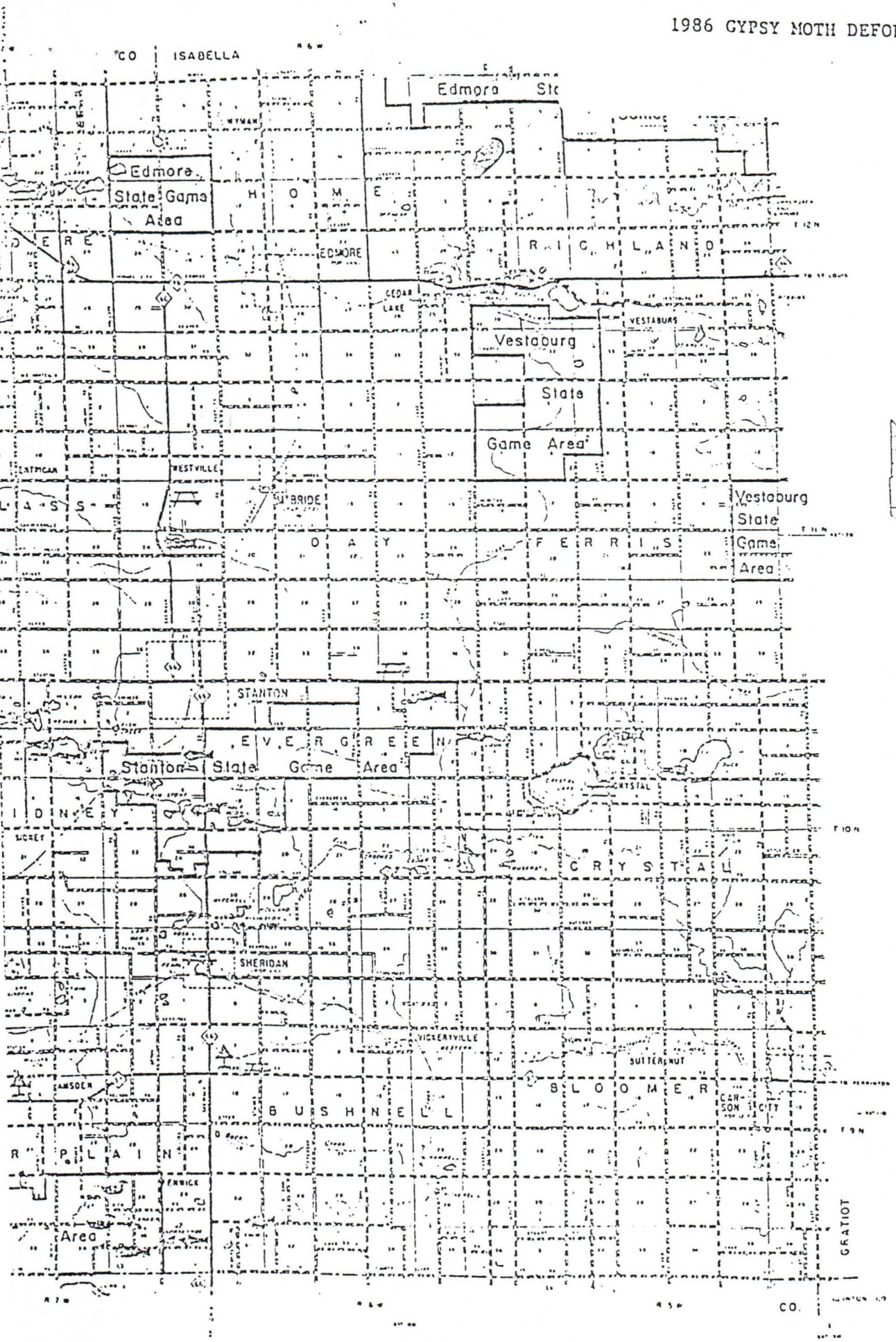
1986
Michigan
Gypsy Moth Defoliation

SAGINAW COUNTY

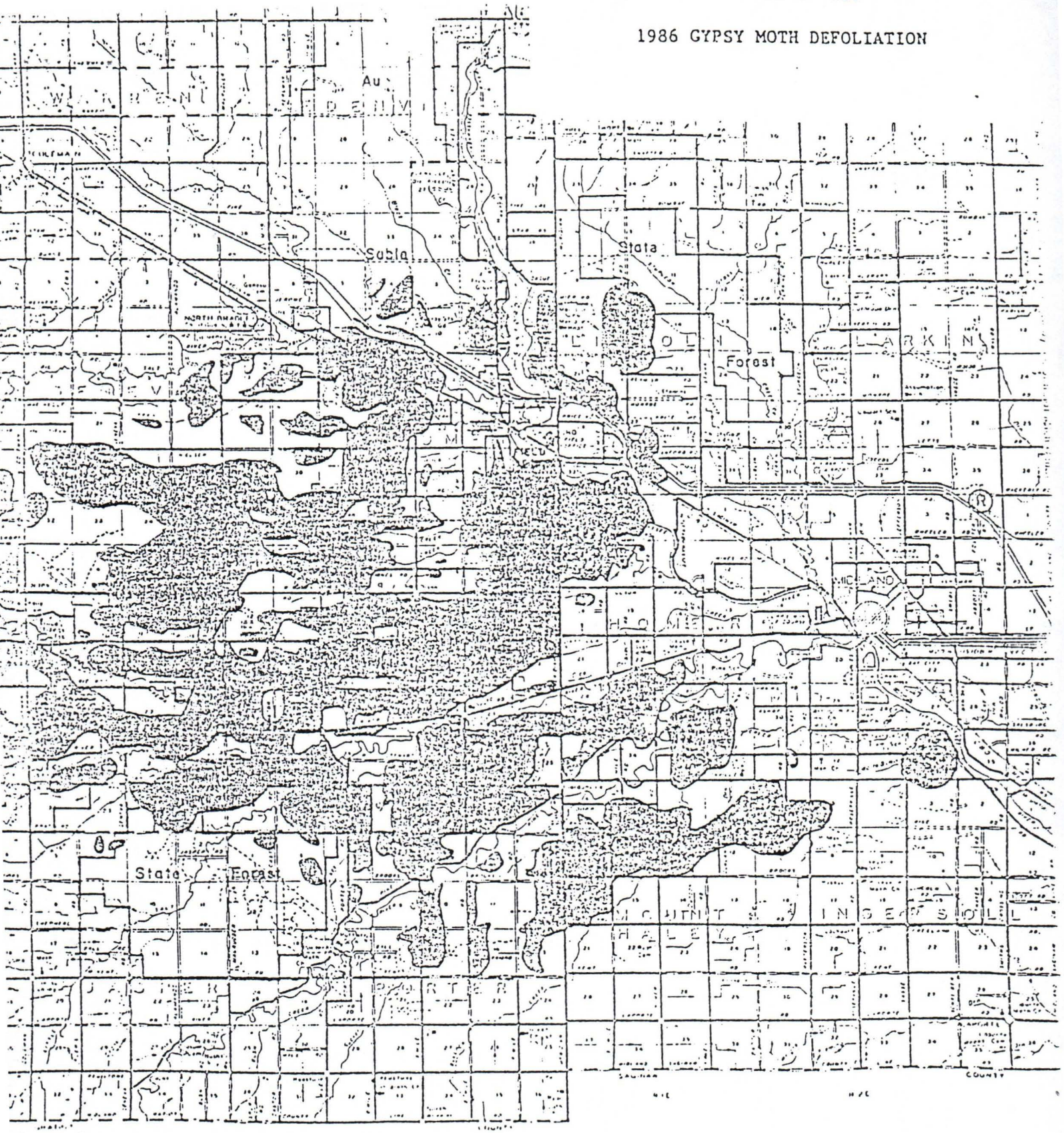
1986 GYPSY MOTH DEFOLIATION



1986 GYPSY MOTH DEFOLIATION

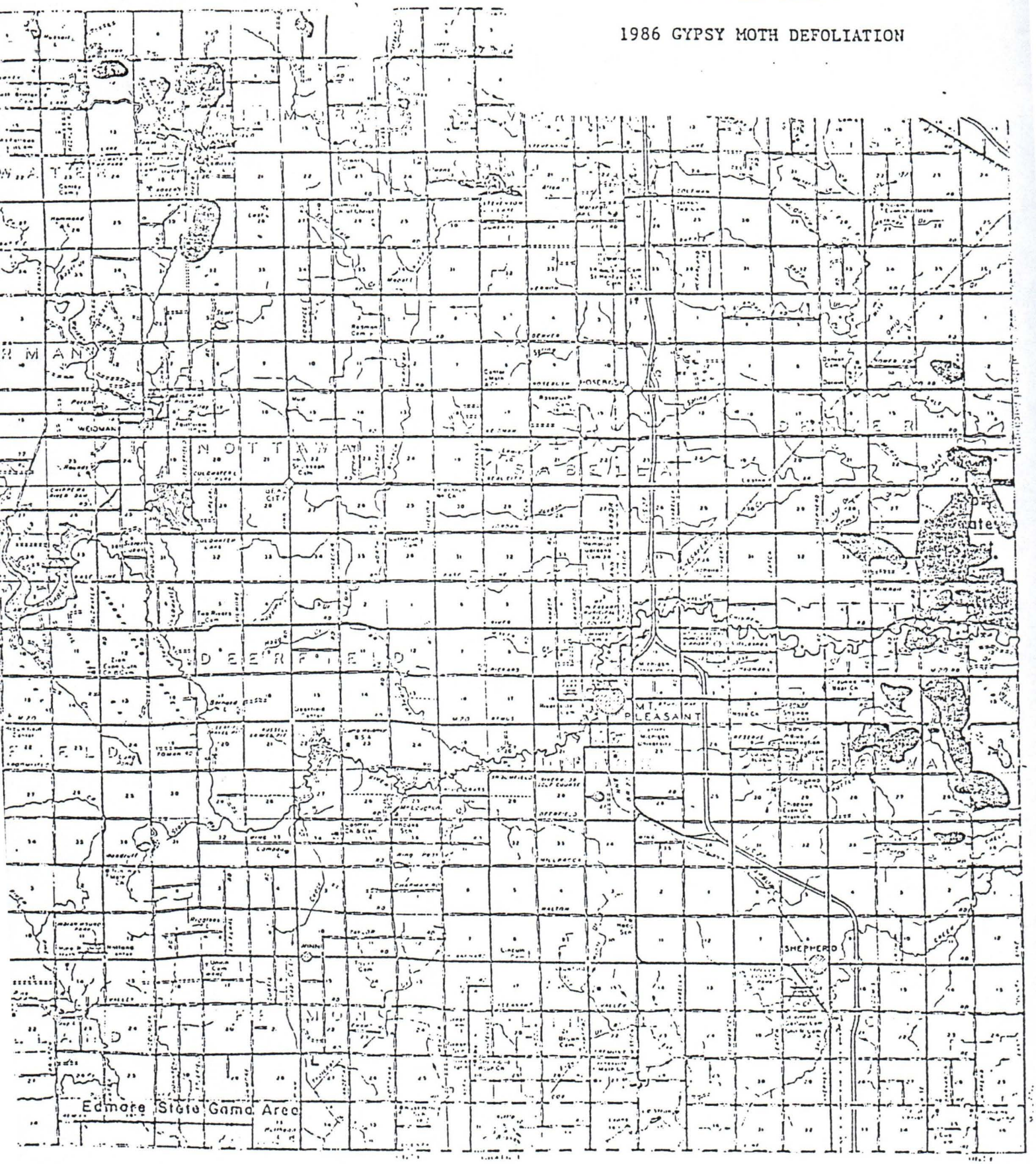


1986 GYPSY MOTH DEFOLIATION



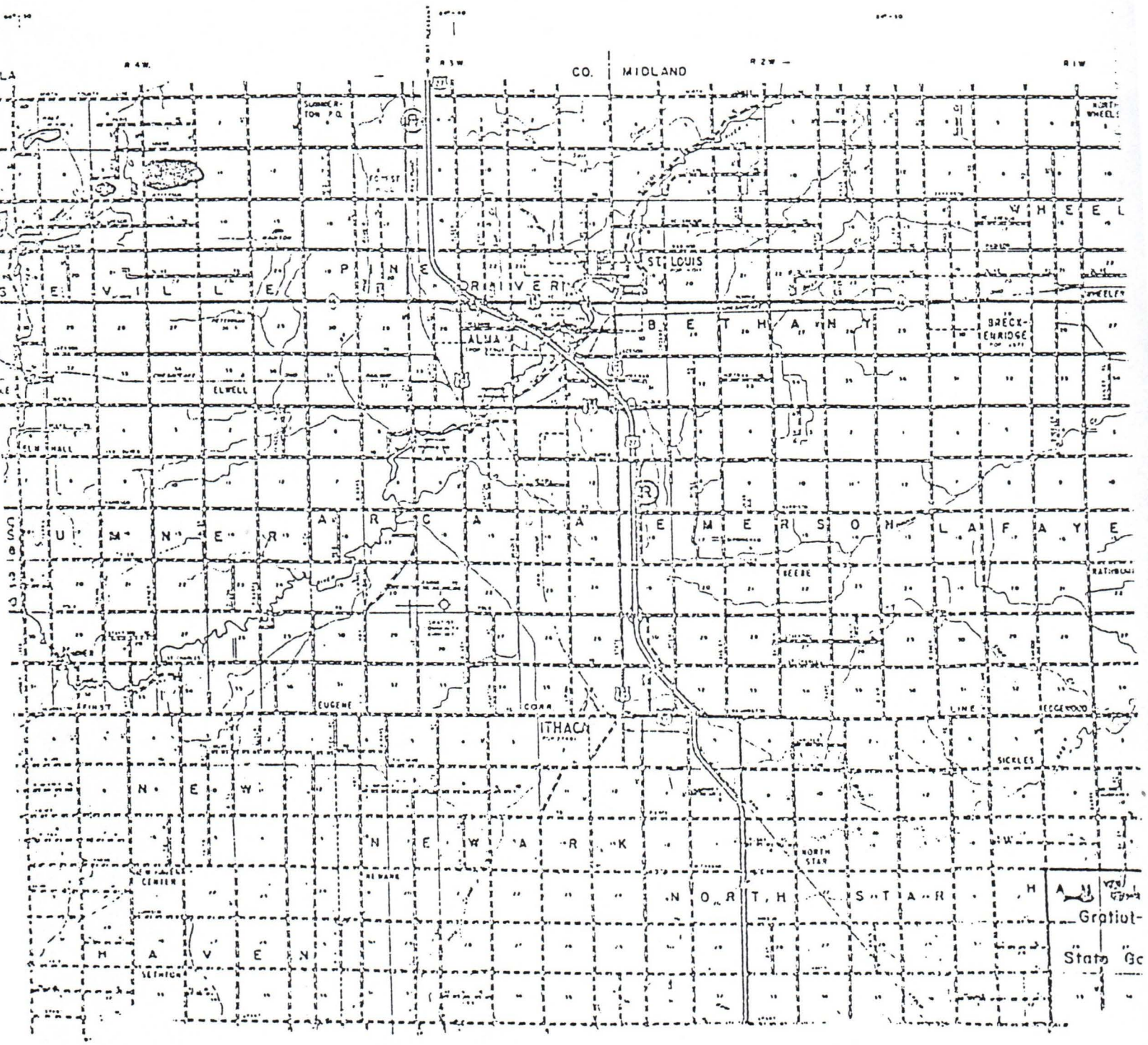
ISABELLA COUNTY

1986 GYPSY MOTH DEFOLIATION



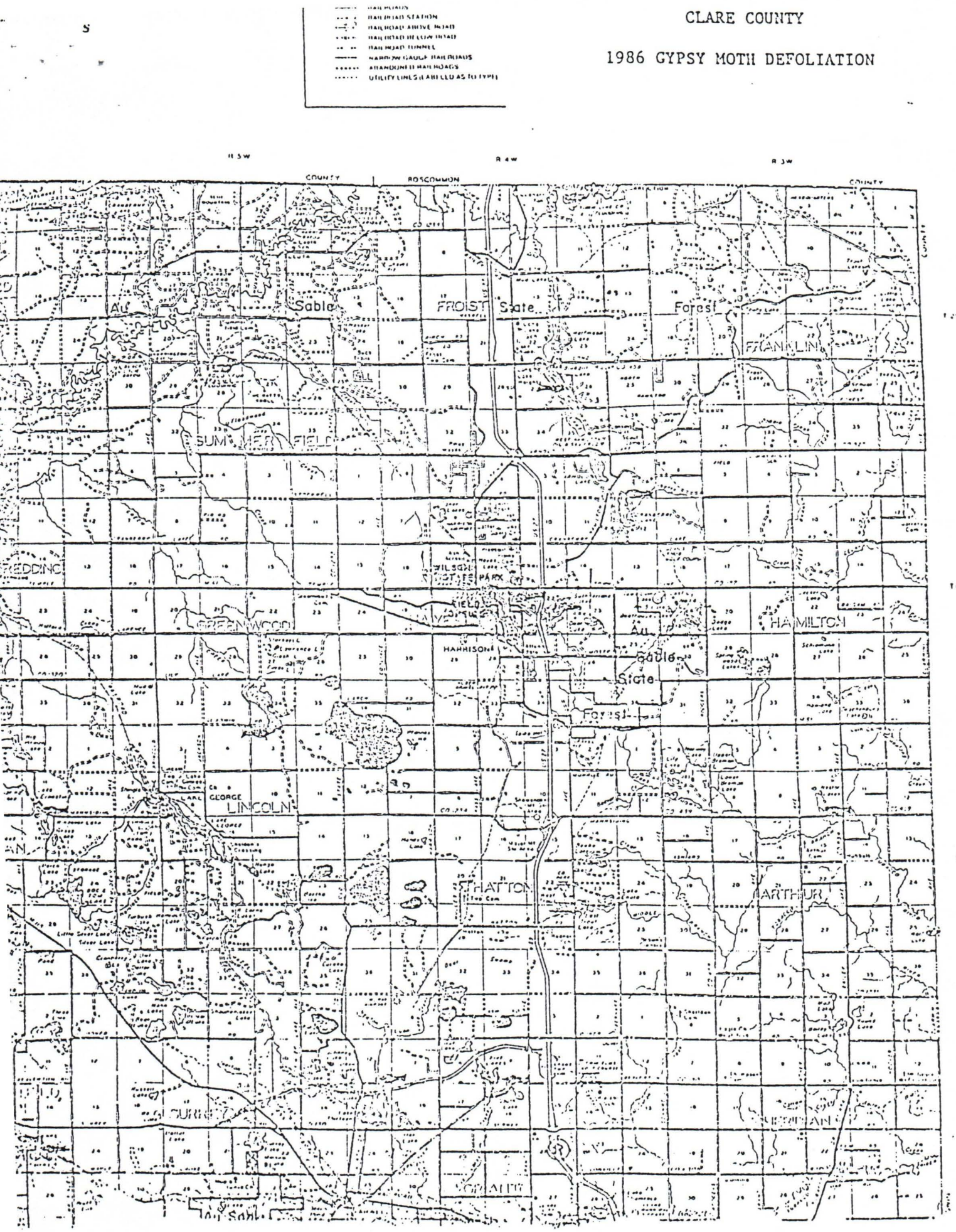
GRATIOT COUNTY

1986 GYPSY MOTH DEFOLIATION



CLARE COUNTY

1986 GYPSY MOTH DEFOLIATION



Saratoga Spittlebug (Aphrophora saratogensis)

Eighteen plantations came up for nymphal evaluation in 1986. Results of the survey can be found in the following table. Saratoga spittlebug was very scarce this year with little growth loss predicted to spittlebug feeding. Spittlebug populations seem to have decreased compared to last years levels which incidentally were very low. No population control measures were undertaken as no population levels warranted such action. Our action threshold is two nymphs / tree unit. Next fall we plan to treat with herbicide several plantations to reduce hazard for this potentially serious red pine pest.

District 5

County	Location	SSB Nymphs/Tree Unit
ALP	31N,7E,S34 NWNE	0.00000
ALP	31N,7E,S34 NWNE	0.02000
MTM	32N,4E,S4 W1/2NE	0.00000
MTM	32N,2E,S1 E1/2E1/2SESE	0.00000
MTM	32N,3E,S6 W1/2W1/2SWSW	0.00000
PRE	35N,3E,S16 N1/2NE	0.00000
PRE	35N,4E,S31 W1/2SESE	0.00000
PRE	36N,2E,S33 W1/2NENE	0.00000

District 6

County	Location	SSB Nymphs/Tree Unit
BEN	25N,14W,S23,NWNW, N1/2N1/2NENW	0.00000
GRT	25N,10W,S31 SW	0.04480
GRT	26N,92,S18 S1/2NW	0.15800

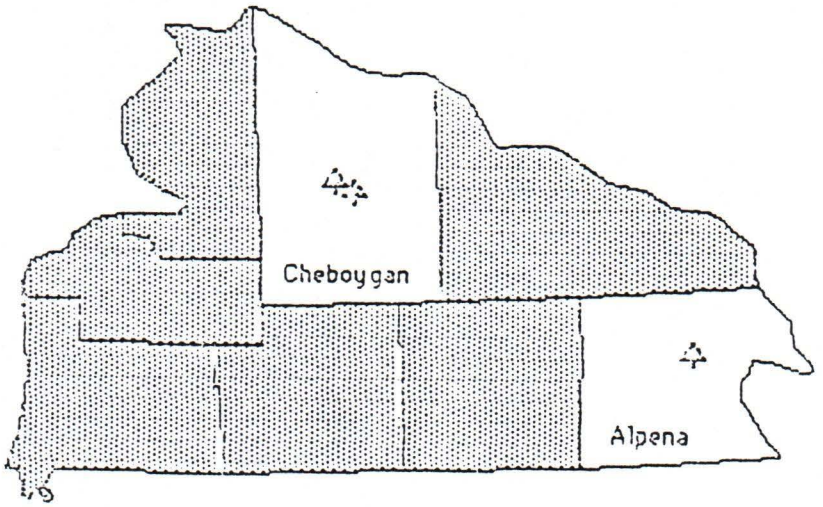
District 7

County	Location	SSB Nymphs/Tree Unit
CRA	25N,4W,S28 SENW	0.00000
GLA	18N,23,S19 N1/2N1/2 SE	0.18700
GLA	18N,2E,S27 NWNENE	0.26000
GLA	20N,12,S12 S1/2SESE	0.20970
ROS	24N,4W,S4 S1/2NWNW	0.00000
ROS	24N,4W,S4 NENENW, N1/2NWNE	0.00000
ROS	24N,4W,S5 W1/2NWNE	0.00000

1986 SARATOGA SPITTLEBUG NYMPHAL SURVEY

Redheaded Pine Sawfly (Neodiprion lecontei)

This year we detected three red pine plantations with active sawfly populations. Two of the stands had population levels far below any action threshold. We will continue to monitor these stands in the future. The third plantation a 54 acre red pine plantation (505 red pine/acre and 131 jack pine volunteers / acre) had fairly high levels of sawfly on the jack pine with the red pine relatively free of larvae. All indications were that the sawfly would probably damage the jack pine but leave the red pine relatively unscathed. We were wrong, oh God please forgive me. More red pine were damaged than originally expected although top kill and mortality are less than a level to warrant economic control on that particular stand. It is likely that we will treat this stand next year to minimize impact on adjacent stands.



- Plantations with active Redheaded pine sawfly populations

Redhumped Oakworm (Symmerista canicosta)

Redhumped oakworm significantly defoliated 3040 acres of oak type in Manistee county. Defoliation on federal land in the Manistee national forest totaled 640 acres the balance fell on private land east of Manistee. This years oakworm defoliation is 1/5 of last years acreage. Populations are declining rapidly. Significant tree mortality is not expected as this season is a late season defoliator.

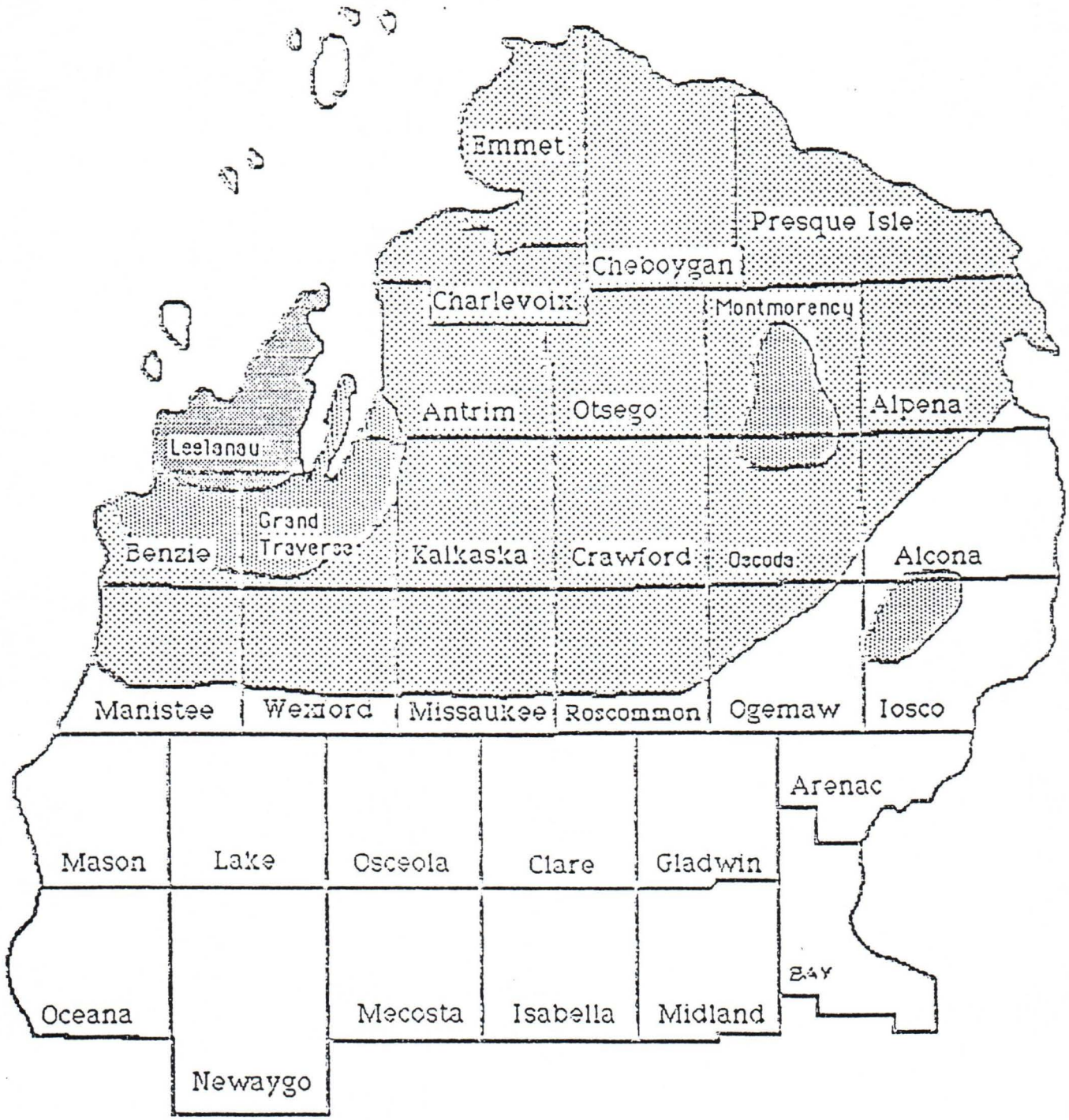
Redhumped Oakworm defoliation (>50%)

Saddled Prominent (Heterocampa guttivitta)

Defoliation caused by saddled prominent was confined this year to North Fox Island of Leelanau county. Five hundred acres of northern hardwoods where heavily defoliated (>60 % foliage loss) on the island this year. This is about 1/3 the acreage of last years defoliation. We expect some limited mortality as this year is the third consecutive year of defoliation. In the past beech has been particularly susceptible. Incidence of disease in the remaining caterpillar populations was very high this year. Wilted larvae were very easily found throughout the defoliated area. We expect that any remaining caterpillars will be very difficult to find next year.

Red Pine Shoot Borer (Dioryctria resinosella)

A roadside survey was employed to delimit infestation zones for this pest in northern lower Michigan. Red pine that fall into a particular zone are likely to be damaged at the level indicated by that zone. Damage levels are as follows: Trace (<1% of the total visible tips in the stand infested); light (1-20%); Moderate (21-60%); Heavy (61% +). Of the three damage zones that we delimited last year , both the light and moderate to heavy zones have been reduced by half. Trace amounts of damage may be found almost regionwide. Damage by this pest is continuing to decrease regionwide.



Red pine shoot borer
Infestation zones

Trace (<1% of total visible tips infested)

Light (1-20 %)

Moderate to heavy (21-60%) to (61+ %)

Pest	Host	Location and Comments
Eastern Tent Caterpillar *Malacosoma americana*	Cherry, Aspen Apple etc.	Throughout Region Clare, Osceola, Roscommon Counties.
Forest Tent Caterpillar *Malacosoma disstria*	Aspen, Northern Hardwoods	Throughout Region populations increasing
Pine Bark Beetles *Ips* spp.	Jack and Red pine	Small scattered Infestations Regionwide
Armillaria root rot *Armillaria* spp.	Red and jack	Regionwide
Gall rusts	Jack and Scots pine	Regionwide
Linden looper/ Fall Cankerworn	Northern Hardwoods	Understory defoliation Emmet, Charlevoix Cheboygan and Otsego counties
Bruce spanworn	Northern Hardwoods	UP overflow